

# Utility Patent Application

## CONFIDENTIAL INFORMATION

5 Patent Application based on: Docket No. 99-559  
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### ~~PERSONAL SAFETY SIGNALING APPARATUS AND SYSTEM~~

#### RELATED APPLICATIONS

15 The present invention was first described in Disclosure Document Number 457,367 filed on June 7, 1999. There are no previously filed, nor currently any co-pending applications, anywhere in the world.

#### BACKGROUND OF THE INVENTION

##### 1. Field of the Invention

20 The present invention relates generally to tracking and emergency signaling devices and, more particularly, to a personal safety signaling apparatus and system.

##### 2. Description of the Related Art

In the related art, many methods for emergency tracking and rescue signaling are known. For example, the following patents disclose a tracking system and method for a cellular phone unit and integrated emergency signal transmitter: U.S. Patent no. **5,515,419** issued in the name of *Sheffer*, and, U.S. Patent no. **5,218,367** issued in the name of *Sheffer et al*;

Further, the following patents describe an emergency signaling unit and alarm system designed to be carried on the person: U.S. Patent no. **4,998,095** issued in the name of *Shields*; U.S. Patent no. **4,468,656** issued in the name of *Clifford et al.*; U.S. Patent no. **4,121,160** issued in the name of *Cataldo*; and, U.S. Patent no. **5,894,591** issued in the name of *Tamayo* discloses a personal emergency response communication apparatus for pagers.

Also, U.S. Patent no. **5,335,246** issued in the name of *Yokev et al.* describes a pager with reverse paging facility and a mobile receiver.

And again, U.S. Patent no. **4,467,142** issued in the name of *Rupp et al.* discloses an automatic dialing system for transmitting emergency calls from persons requiring assistance.

Consequently, a need has been felt for providing an apparatus and method which overcomes provides effective, location specific signaling and emergency tracking in a portable manner.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide an improved personal emergency signaling device.

5 It is a feature of the present invention to provide an improved personal emergency signaling device that is small in nature and designed to fit into a case along with a pager, a watch or the like.

10 Briefly described according to one embodiment of the present invention, a personal emergency signaling device is provided that, it is envisioned, will always be carried with an individual, so that emergency services can always be summoned. Such instances where help would be required would be assault, theft, rape, gunfire, fire, severe weather conditions, sudden illnesses and the like. The device would be purchased in a ready-to-activate state. A fee would be charged at the time of purchase to offset the cost of setting up full time emergency operations that utilize the existing 911 telephone systems. Once  
15 activated, it would have to be returned to a service center to be rearmed for another fee. Any misuse of the invention would be governed by a contractual obligation that would require the submission of a fee to offset the costs for the rescue operation. Depending on the enclosure that the device is mounted, an activation switch or pushbutton would request emergency help from anywhere in  
20 the world. The device could include a microphone for the transmission of live

audio from the incident scene as well.

Advantages of the present invention allow the emergency signaling device to summons emergency help anywhere in the world, and automatically calls 911 and signals its location. It is envisioned that it can be used for crimes, natural  
5 disasters, fires, and the like, and may include a microphone for the transmission of live audio.

Provided as part of pager, watch fits in any small enclosure.

DESCRIPTIVE KEY

10	personal safety signaling apparatus	110	user
15	enclosure	115	first wireless link
20	power indication light	120	satellite
25	front panel	125	land-based wireless reception means
30	internal microphone	130	central monitoring station
35	activation means	135	second wireless link
40	activation means cover guard	140	land-based communication link
45	antenna	145	emergency response vehicle
50	belt clip	150	conventional alerting method
55	pager enclosure	155	first functional block
60	operating controls	160	second functional block
65	output display	165	third functional block
70	power switch	170	fourth functional block
75	attachment clip	175	fifth functional block
80	wrist watch	180	first operational block
85	watch face	185	sixth functional block
90	strap	190	seventh functional block
95	fastening means	195	eighth functional block
100	time setting means		
105	recessed activation means		

### BRIEF DESCRIPTION OF THE DRAWINGS

The advantages and features of the present invention will become better understood with reference to the following more detailed description and claims taken in conjunction with the accompanying drawings, in which like elements are identified with like symbols, and in which:

FIG. 1 is a perspective view of the personal safety signaling apparatus 10 according to a preferred embodiment of the present invention;

FIG. 2a is a perspective view of the personal safety signaling apparatus 10 according to an alternate embodiment of the present invention;

FIG. 2b is another perspective view of the personal safety signaling apparatus 10 according to another alternate embodiment of the present invention;

FIG. 3 is a pictorial representation of the wireless radio frequency link as used with the personal safety signaling apparatus 10; and

FIG. 4 is a flow diagram depicting the event sequence that occurs when purchasing, activating and using a personal safety signaling apparatus 10.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

The best mode for carrying out the invention is presented in terms of its preferred embodiment, herein depicted within the Figures 1 through 4.

1. Detailed Description of the Figures

Referring now to FIG. 1, a personal safety signaling apparatus 10 is disclosed. The personal safety signaling apparatus 10 is enclosed in an enclosure 15 envisioned to be of high impact plastic. A power indication light 20 is located on a front panel 25 of the enclosure 15 and indicates the presence of a charged and functional internal battery. Should the power indication light 20 be extinguished, the user will know that the battery must be replaced or recharged. Also located on the front panel 25 is an internal microphone 30. The internal microphone 30 is used to pass audio information from the scene of use of the personal safety signaling apparatus 10 to a monitoring station. This audio information allows for monitoring station personnel to more accurately and quickly determine the nature of the emergency and as such, supply a more appropriate team of emergency personnel. This procedure will be described in greater detail herein below. Also located on the front panel 25 of the enclosure 15 is an activation means 35 such as a toggle switch, located under an activation means cover guard 40. The activation means 35 is used by the user when an emergency situation exists. It is envisioned that these emergency situations could include range from an assault, to a theft, a rape, gunfire, a fire, severe weather conditions, sudden illnesses and the like. The activation means cover guard 40 is present to prevent accidental triggering should the personal

safety signaling apparatus 10 be accidentally brushed against, placed in a pocket, a purse, a briefcase and similar enclosures. Located on the top of the enclosure 15 is an antenna 45 for use in transmitting the associated radio signals. Located on the rear of the enclosure 15 is a belt clip 50 to allow the personal safety signaling apparatus 10 to be worn on the user's belt or clipped to a pocket. The overall size of the personal safety signaling apparatus 10 is envisioned to be approximately that of a cellular telephone. The current technology as used with the personal safety signaling apparatus 10 is currently envisioned to be that of cellular technology due to size, weight, and power requirements, but it should be assumed that other, newer, digital technologies currently under development and those to be used in the future could also be used with the preferred embodiment of the present invention, and as such, should not be interpreted as a limiting factor.

Referring next to FIG. 2a, a perspective view of the personal safety signaling apparatus 10 as provided in a pager enclosure 55 is disclosed according to an alternate embodiment of the present invention. The pager enclosure 55 contains all the normal controls and items usually associated with a pager. These include the operating controls 60, the output display 65, the power switch 70 and the attachment clip 75. Also located on the front of the pager enclosure 55 are an activation means 35 and an activation means cover guard

40, identical in nature and function to those items described in FIG. 1. While the use of the pager in the pager enclosure 55 operates identically to that of its conventional common counterparts, the activation means 35 and the activation means cover guard 40 allow it to operate the emergency signaling device that is built into the pager enclosure 55. Such multi-use ensures the emergency signaling aspect of the personal safety signaling apparatus 10 will always be present with the user whenever the user carries his or her pager.

Referring now to FIG. 2b, a perspective view of the personal safety signaling apparatus 10 as provided in a wrist watch 80 is depicted according to an alternate embodiment of the present invention. The wrist watch 80 is equipped with a watch face 85, a strap 90, a fastening means 95 and a time setting means 100 as would be found on a conventional watch. A recessed

activation means 105 is provided on the side of the wrist watch 80 as shown. Its recessed nature prevents accidental triggering. During an emergency event as aforementioned described, the user would simply depress the activation means 105 to trigger the transmission of a remote signal.

Both of the alternate embodiments as depicted in FIG. 2a and 2b are currently within range of VSLI production, and as the reception and receiving station infrastructure of both analog and digital wireless networks are built up, the use of such alternate embodiments anywhere on the earth's surface will be



*FIGS. 2a-2d*  
possible. ~~FIGs 2a and 2b~~ are intended to disclose the use of the emergency signaling technology in any small, personal item that is normally carried by an individual and as such does not limit the use of the technology in said items.

*FIG 3*  
Referring now to FIG. 3, a pictorial representation of the wireless radio link

5 between the various communication systems as used with the personal safety signaling apparatus 10 is depicted. A user 110 is equipped with a personal safety signaling apparatus 10 as shown. In the event of an emergency, the user activates the personal safety signaling apparatus 10 and a first wireless link 115 is transmitted as shown. The first wireless link 115 is received by a satellite 120 or a land-based wireless reception means 125, such as a cellular telephone tower. The land-based wireless reception means 125 is envisioned as being used in large metropolitan areas while the use of the satellite-based system will allow continuous coverage all over the earth, which would be more advantageous than cellular-based links which are not continuous. Both the  
15 satellite 120 and the land-based wireless reception means 125 would be capable of triangulating on the first wireless link 115 so that the location of the user 110 could be pinpointed with acceptable accuracy. Most cellular systems are currently undergoing transformation to identify the location of the signal as required by FCC regulations. Such technology would be used in an unaltered  
20 state with the current invention to determine location. The emergency signal

then continues to a central monitoring station 130 via a second wireless link 135 or a land-based communication link 140, such as a telephone line. The central monitoring station 130 then alerts an emergency response vehicle 145 via a conventional alerting method 150 such as VHF or UHF communications. In addition to be supplied with the nature of the emergency, the emergency response vehicle 145 is also supplied with the location of the emergency via the triangulation method aforementioned described. In this manner, should the user 110 not know or not be able to state their location, they can still be found and services rendered.

Referring finally to FIG. 4, a flow diagram depicting the event sequence that occurs when purchasing, activating and using a personal safety signaling apparatus 10 is disclosed. The sequence begins at a first functional block 155 where the user decides that the functions and features of the personal safety signaling apparatus 10 (not shown in this FIG.) are desired. Also occurring during the first functional block 155 is the purchase of the personal safety signaling apparatus 10 (not shown in this FIG.) itself. This purchase is for the electronic device depicted by the enclosure 15 (as shown in FIG. 1) or similar devices as shown in FIG. 2a and 2b. This is a one time purchase and will not need to be repeated for the life of the device. At a second functional block 160 the user also pays a connection or service fee to allow access to the system.

This fee is also a one time fee, and provided the user does not activate the system, the fee does not need to be repaid. The monies collected by the second functional block 160 are used to fund, build and expand the wireless infrastructure as defined in FIG. 3. At this point the user is activated and ready to utilize the personal safety signaling apparatus 10 (not shown in this FIG.) for any emergency. At a third functional block 165, the central monitoring station 130 (as shown in FIG. 3) begins the monitoring process. Provided an emergency signal should never be received, the process remains at the third functional block 165 indefinitely. Should an emergency signal be received, the process continues to a fourth functional block 170. It is at the fourth functional block 170, that the location of the emergency along with the nature of the emergency is determined. The location is determined by triangulation of the radio signal as aforementioned described. The nature of the invention is determined by listening to the audio content of the emergency signal as provided by the internal microphone 30 (as shown in FIG. 1). At this point the knowledge gained about the emergency is passed to the pertinent emergency personnel at a fifth functional block 175 who respond to the scene in a conventional manner as would be used during any other emergency request such as those identified by conventional telephones, cellular telephones, amateur radio, automatic alarm systems and the like. The determination of whether the request constituted a

5 false alarm is made at a first operational block 180 by the responding emergency  
personnel. If the request was not a false alarm, the user pays to reinitialize his  
or her personal safety signaling apparatus 10 (not shown in this FIG.) at a sixth  
functional block 185 and the sequence of control returns to the third functional  
10 block 165. The reinitialization fee is not meant to penalize the user, but instead  
to allow for the continued growth of the system as defined by the second  
functional block 160. However, if it is determined the request for emergency  
assistance was a false alarm, the user must pay a fine at a seventh functional  
block 190 and pay for all costs associated with the rescue effort at an eighth  
functional block 195. The user then must also pay for the reinitialization fee at  
the sixth functional block 185 as well, before the monitoring sequence begins  
again at the third functional block 165. The seventh functional block 190 and the  
eighth functional block 195 are meant to discourage false alarms and persuade  
the user to take necessary precautions from happening again.

15 It is envisioned that other styles and configurations of the present  
invention can be easily incorporated into the teachings of the present invention,  
and only one particular configuration shall be shown and described for purposes  
of clarity and disclosure and not by way of limitation of scope.

20 2. Operation of the Preferred Embodiment

The preferred embodiment of the present invention can be used by the common user in a simple and effortless manner. The operation of the personal safety signaling apparatus 10 is best described in conjunction with <sup>FIG. 1, FIGS 2a-2d,</sup> ~~FIG. 1, FIG. 2a, FIG. 2b, FIG. 3 and FIG. 4.~~ <sup>FIG. 3 and FIG. 4</sup>

5 The decision to purchase the personal safety signaling apparatus 10 must be made on an individual basis. While the functions and features provided by it are applicable and usable to almost everyone, it is envisioned that some people would be more in need of it than others. This group includes the elderly who live and/or travel alone, young children who travel back and forth to school by themselves, women who work after dark, anyone who works and/or travels through questionable neighborhoods, and the like. Once the decision has been made to purchase such a device, the question of which type of device comes into play. The personal safety signaling apparatus 10 can be a basic unit as described in FIG. 1 or built into another personal unit such as a pager enclosure 10 55 or a wrist watch 80. Once the device is purchased, it must be activated in a manner similar to that used with conventional cellular telephones or pagers, as shown in the second functional block 160. The actual user, whether it is a young child or an elderly adult, must be shown the basic operating features of the personal safety signaling apparatus 10, however, due to its simple and basic 20 use, it is capable of being mastered by the ordinary user with little or no training.

At this point the central monitoring station 130 begins the monitoring process.

Upon reception of the emergency signal from the personal safety signaling apparatus 10, the central monitoring station 130 notifies the proper authorities as described in FIG. 3. The responding emergency response vehicle 145 or vehicles handle the emergency using conventional and well known methods. These vehicles are envisioned to be local law enforcement agencies, local fire departments or local rescue squads. However, with the added information gleaned from the location and nature of the emergency, other vehicles such as search and rescue teams, helicopters, federal law enforcement agencies, specialized medical care and the like may also be dispatched. At this point, a determination of the actual emergency and whether or not it necessitated the use of the personal safety signaling apparatus 10 is made. Any fines or usage fees that result from a false alarm must be paid by the user or responsible individual. If the user wishes to continue use of the personal safety signaling apparatus 10, the reinitialization fee must be paid. If paid, the monitoring sequence then begins anew.

The foregoing description is included to illustrate the operation of the preferred embodiment and is not meant to limit the scope of the invention. The scope of the invention is to be limited only by the following claims.